

USING TECHNOLOGY TO STUDY CELLULAR AND MOLECULAR BIOLOGY		
Washington, D.C. Science Learning Standards: High School Biology		
Lesson	Standard	Description
2, 3	B.1.1	Know the elements of scientific methodology (identification of a problem, hypothesis formulation and prediction, performance of experimental tests, analysis of data, falsification, developing conclusions, reporting results) and be able to use a sequence of those elements to solve a problem or test a hypothesis. Also understand the limitations of any single scientific method (sequence of elements) in solving problems.
3	B.1.2	Know that scientists cannot always control all conditions in order to obtain evidence, and when they are unable to do so for ethical or practical reasons, they try to observe as wide a range of natural occurrences as possible so as to be able to discern patterns.
3	B.1.3	Recognize the cumulative nature of scientific evidence.
2, 3	B.1.4	Recognize the use and limitations of models and theories as scientific representations of reality.
3	B.1.5	Distinguish between a conjecture (guess), a hypothesis, and a theory as these terms are used in science.
2, 3	B.1.6	Plan and conduct scientific investigations to explore new phenomena, to check on previous results, to verify or falsify the prediction of a theory, and to use a crucial experiment to discriminate between competing theories.
2, 3	B.1.7	Use hypotheses to choose what data to pay attention to and what additional data to seek, and to guide the interpretation of the data.
3	B.1.8	Identify and communicate the sources of error (random and systematic) inherent in an experiment.
3	B.1.9	Identify discrepant results and possible sources of error or uncontrolled conditions.
1, 2, 3	B.1.10	Select and use appropriate tools and technology to perform tests, collect data, analyze relationships, and display data. (The focus is on manual graphing, interpreting graphs, and mastery of metric measurements and units, with supplementary use of computers and electronic data gathering when appropriate.)
2, 3	B.1.11	Formulate and revise explanations using logic and evidence.
1, 3	B.1.12	Analyze situations and solve problems that require combining concepts from more than one topic area of science and applying these concepts.
3	B.1.14	Observe natural phenomena and analyze their location, sequence, or time intervals (e.g., relative ages of rocks and succession of species in an ecosystem).
3	B.1.15	Explain that science discoveries can have both positive and negative implications, involve different decisions regarding ethics and allocation of resources (e.g., organ transplants, stem cell research, forest management and land use).
1, 3	B.2.5	Know that living things have many different kinds of molecules, including small ones such as water, medium-sized ones such as sugars, amino acids, and nucleotides, and large ones such as starches, proteins, and DNA.
3	B.2.7	Explain the hierarchical organization of living things from least complex to most complex (subatomic, atomic,

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		molecular, cellular, tissue, organs, organ system, organism, population, community, ecosystem, biosphere).
Washington, D.C. Mathematics Learning Standards: Algebra I & Probability and Statistics		
Lesson	Standard	Description
1	AI.N.1	Use the properties of operations on real numbers, including the associative, commutative, identity, and distributive properties, and use them to simplify calculations.
Washington, D.C. Reading / English Language Arts Learning Standards: Grades 9 & 10		
Lesson	Standard	Description
All lessons	9.LD-D.1	Implement techniques to improve productivity of group discussions, including setting clear goals, understanding the purpose of the team project and the ground rules for decision-making, and setting deadlines.
All lessons	9.LD-Q.2	Summarize in a coherent and organized way the information and ideas learned from a focused discussion.
3, 4	9.LD-V.8	Determine the meanings of multiple-meaning words by using context.
3, 4	9.IT-E.1	Analyze the main or controlling idea in passages or paragraphs.
3, 4	9.IT-E.5	Support conclusions drawn from ideas and concepts in informational and technical passages.
2, 3, 4	9.R.1	Formulate open-ended research questions and apply steps for obtaining and evaluating information from a variety of sources, organizing information, and presenting research.
3	9.W-E.2	Produce functional texts (e.g., memos, e-mails, correspondence, project plans, proposals, bios) that: address audience needs; state purpose and context; and adopt a customary format, including proper salutation, closing, and signature when appropriate.
3, 4	9.W-E.3	Write interpretations of literary or expository reading that: exhibit careful reading, understanding, and insight; organize the interpretation around several clear ideas, premises, or images; and justify the interpretation through sustained use of examples and textual evidence.
3, 4	9.EL.5	Identify and use: correct and consistent verb tense (present, past, and future perfect and perfect progressive; regular and irregular verbs; transitive and intransitive verbs) and subject-verb agreement, and appropriate noun-pronoun agreement (nominative, objective, possessive, reflexive, and relative pronouns; pronoun/antecedent agreement; and clear pronoun reference).
3, 4	9.EL.6	Identify and use functional sentence structure. Make effective use of parallel structure. Place modifiers properly. Avoid run-on sentences, comma splices, and sentence fragments. Use different types of clauses and phrases, including adverb and adjective clauses. Use a variety of sentence structures, including compound and compound-complex sentences with effective coordination and subordination of ideas and parallel, repetitive, and analogous sentence structures.
All lessons	10.LD-D.1	Participate productively in self-directed teams for a particular purpose, including posing relevant questions; extracting essential information from others' input, building on the ideas of others, and contributing relevant information or ideas in group discussions; and summarizing orally, in a coherent and organized way, information and ideas learned.

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All lessons	10.LD-Q.2	Formulate judgments about the ideas under discussion and support those judgments with convincing evidence.
3, 4	10.IT-E.3	Describe the controlling idea or specific purpose of passages and paragraphs and determine the essential elements that elaborate it.
3, 4	10.IT-E.5	Make relevant inferences by synthesizing concepts and ideas from a single reading selection.
2, 3, 4	10.IT-DP.6	Synthesize information from multiple sources (e.g., maps, illustrations, schematic diagrams, manuals, product information, consumer publications) to draw conclusions about the ideas presented.
3, 4	10.IT-DP.7	Analyze the presentation of information.
2, 3, 4	10.R.1	Formulate open-ended research questions and apply steps for obtaining and evaluating information from a variety of sources, organizing information, and presenting research.
3, 4	10.EL.3	Use ending punctuation, correct internal punctuation (commas, ellipses, colons, semicolons, parentheses), apostrophes for contractions and possessives, and correct punctuation for quotations (quotation marks, ellipses, brackets).
3, 4	10.EL.4	Produce legible work that shows accurate spelling and correct use of the conventions of punctuation and capitalization.
National Health Education Standards – Grades 9 – 12: cited from pre-publication document of National Health Education Standards, Pre K-12, American Cancer Society, December 2005 – August 2006		
Lesson	Standard	Performance Indicator
3	3.12.1	Evaluate the validity of health information, products, and services.